

b. Amendments to the Specification

Rewrite the paragraph at page 1, lines 2 – 4, as:

The Government has a paid-up license in this invention and the right in limited circumstances to require the patent owner to license others on
5 reasonable terms as provided for by the terms of Contract No. ~~MDA972-03-C-0046~~ MDA 972-02-C-0046 awarded by DARPA.

Rewrite the paragraph at page 2, lines 24 – 26, as:

In some embodiments of the system, the pairs of values correspond to
10 coordinates of the signal points of the 4-PSK, 16-QAM, or 16-PSK 2D constellation to 5% or better.

Rewrite the paragraph between page 3, line 23, and page 4, line 24, as:

Figures 1A is a top view of an optical transmitter that generates a modulation
15 pattern on an optical subcarrier corresponding to signal points of a 4-point 2D constellation;

Figures 1B is a cross-sectional view of optical modulator of Figure 1A at the vertical plane containing line AA--AA;

Figure 2 shows a representation of the four-point phase shift keyed (4-PSK)
20 constellation;

Figures 3 show a representation of a trapezoid 2D constellation;

Figure 4 shows a representation of an offset 4-PSK 2D constellation;

Figure 5 is a top view of an optical transmitter that generates a modulation
25 pattern on an optical subcarrier corresponding to signal points from a 16-point 2D constellation;

Figure 6A is a flow chart for a method of transmitting digital data, e.g., using a transmitter of Figure 1A-1D or 5;

Figure 6B 6A is a flow chart showing additional steps of some embodiments of the method of Figure 6A;

Figure 7A shows a representation of the 16-point QAM constellation that some embodiments of the modulator of Figure 5 produce on an optical subcarrier;

5 Figure 7B shows a representation of the 16-point PSK constellation that some embodiments of the modulator of Figure 5 produce on an optical subcarrier;

Figures 8 – 13 are cross-sectional views of intermediate structures produced during fabrication of optical modulators of Figures 1A – 1B, and 5 as integrated optical devices;

10 Figure 14 is a cross-sectional view of a single electro-optical phase shifter in one integrated optical device for the optical modulators of Figures 1A – 1B, and 5;

Figure 15 is a top view of a portion of an integrated optical device with a pair of electro-optical phase modulators and associated electrodes as in Figures 1A – 1B and 5;

15 Figure 16A is a cross-sectional view of the structure of Figure 15; and

Figure 16B is an equivalent circuit that illustrates biasing in the structure of Figures 15 and 16A; and

Figure 17 shows a wireless transmitter that uses an electro-optical modulator to encode digital data at high frequencies.

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